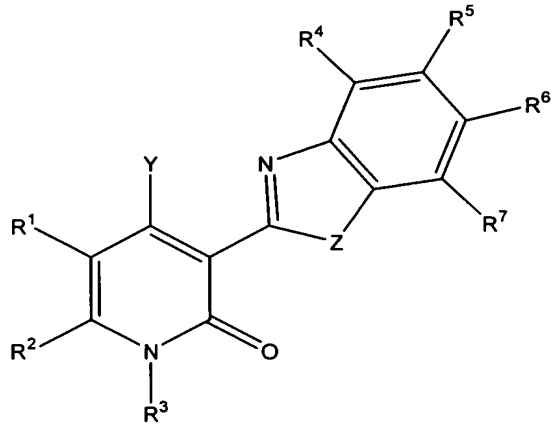
CLAIMS

What is claimed is:

1. A compound having the structure I, a tautomer of the compound, a pharmaceutically acceptable salt of the compound, or a pharmaceutically acceptable salt of the tautomer



I

wherein,

Y is selected from the group consisting of –OH, -OR^8 groups, -SH, -SR^9 groups, -$NR^{10}R^{11}$ groups, -CN, -C(=O)-R^{12} groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted aralkyl groups, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and

unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted hydroxyalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl groups, and substituted and unsubstituted heterocyclyloxyalkyl groups;

Z is selected from the group consisting of O, S, and NR^{13} groups;

R^1 and R^2 join to form a 6 membered substituted or unsubstituted ring comprising at least one O, N, or S atom;

R^3 and R^{13} may be the same or different and are selected from the group consisting of H, -OH, substituted and unsubstituted alkoxy groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, -C(=O)H, -C(=O)-alkyl groups, and –C(=O)-aryl groups;

R^4, R^5, R^6, and R^7 may be the same or different and are independently selected from the group consisting of H, Cl, Br, F, I, $-NO_2$, -CN, -OH, $-OR^{14}$ groups, $-NR^{15}R^{16}$ groups, $-C(=O)R^{17}$ groups, -SH, $-SR^{18}$ groups, $-S(=O)R^{19}$ groups, $S(=O)_2R^{20}$ groups, substituted and unsubstituted amidinyl groups, substituted and unsubstituted guanidinyl groups, substituted and unsubstituted primary, secondary, and tertiary alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted

and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted hydroxyalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl groups, and substituted and unsubstituted heterocyclyloxyalkyl groups;

R^8 is selected from the group consisting of substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl groups, –C(=O)-aryl groups, -C(=O)O-alkyl groups, -C(=O)O-aryl groups, -C(=O)NH_2, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups, -C(=O)$N(alkyl)_2$ groups, -C(=O)$N(aryl)_2$ groups, -C(=O)N(alkyl)(aryl) groups, -NH_2, -NH(alkyl) groups, -NH(aryl) groups, -$N(alkyl)_2$ groups, -N(alkyl)(aryl) groups, -$N(aryl)_2$ groups, -C(=O)NH(heterocyclyl) groups, -C(=O)$N(heterocyclyl)_2$ groups, -C(=O)N(alkyl)(heterocyclyl) groups, and -C(=O)N(aryl)(heterocyclyl) groups;

R^9 and R^{18} may be the same or different and are independently selected from the group consisting of substituted and unsubstituted alkyl groups, and substituted and unsubstituted aryl groups;

R^{10} is selected from the group consisting of H, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, and substituted and unsubstituted heterocyclyl groups;

R^{11} is selected from the group consisting of H, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted heterocyclyl groups, -OH, alkoxy groups, aryloxy groups, $-NH_2$, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted alkylamino groups, substituted and unsubstituted arylamino groups, substituted and unsubstituted dialkylamino groups, substituted and unsubstituted diarylamino groups, substituted and unsubstituted (alkyl)(aryl)amino groups, -C(=O)H, -C(=O)-alkyl groups, -C(=O)-aryl groups, -C(=O)O-alkyl groups, -C(=O)O-aryl groups, $-C(=O)NH_2$, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups, $-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$ groups, -C(=O)N(alkyl)(aryl) groups, -C(=O)-heterocyclyl groups, -C(=O)-O-heterocyclyl groups, -C(=O)NH(heterocyclyl) groups, $-C(=O)-N(heterocyclyl)_2$ groups, -C(=O)-N(alkyl)(heterocyclyl) groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted hydroxyalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and

unsubstituted aryloxyalkyl groups, and substituted and unsubstituted heterocyclyloxyalkyl groups;

R^{12} is selected from the group consisting of H, -OH, alkoxy groups, aryloxy groups, $-NH_2$, -NH(alkyl) groups, -NH(aryl) groups, $-N(alkyl)_2$ groups, $-N(aryl)_2$ groups, -N(alkyl)(aryl) groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, -NH(heterocyclyl) groups, $-N(heterocyclyl)_2$ groups, -N(alkyl)(heterocyclyl) groups, and -N(aryl)(heterocyclyl) groups;

R^{14} is selected from the group consisting of substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl groups, –C(=O)-aryl groups, -C(=O)-heterocyclyl groups, $-C(=O)NH_2$, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups, $-C(=O)N(alkyl)_2$ groups, $-C(=O)N(aryl)_2$ groups, -C(=O)N(alkyl)(aryl) groups, -C(=O)NH-heterocyclyl groups, $-C(=O)N-(heterocyclyl)_2$ groups, -C(=O)N(alkyl)(heterocyclyl) groups, -C(=O)N(aryl)(heterocyclyl) groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (heterocyclyl)(alkyl)aminoalkyl groups, substituted and unsubstituted (heterocyclyl)(aryl)aminoalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and

unsubstituted aryloxyalkyl groups, substituted and unsubstituted hydroxyalkyl groups, and substituted and unsubstituted heterocyclyloxyalkyl groups;

R^{15} is selected from the group consisting of H, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, and substituted and unsubstituted heterocyclyl groups;

R^{16} is selected from the group consisting of H, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted heterocyclyl groups, -C(=O)H, -C(=O)-alkyl groups, –C(=O)-aryl groups, -C(=O)NH_2, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups, -C(=O)N(alkyl)$_2$ groups, -C(=O)N(aryl)$_2$ groups, -C(=O)N(alkyl)(aryl) groups, -C(=O)O-alkyl groups, -C(=O)O-aryl groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclylalkyl groups, -C(=O)-heterocyclyl groups, -C(=O)-O-heterocyclyl groups, -C(=O)NH(heterocyclyl) groups, -C(=O)-N(heterocyclyl)$_2$ groups, -C(=O)-N(alkyl)(heterocyclyl) groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (heterocyclyl)(alkyl)aminoalkyl groups, substituted and unsubstituted (heterocyclyl)(aryl)aminoalkyl groups, substituted and unsubstituted hydroxyalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and unsubstituted

aryloxyalkyl groups, and substituted and unsubstituted heterocyclyloxyalkyl groups; and

R^{17}, R^{19}, and R^{20} may be the same or different and are independently selected from the group consisting of H, $-NH_2$, -NH(alkyl) groups, -NH(aryl) groups, $-N(alkyl)_2$ groups, $-N(aryl)_2$ groups, -N(alkyl)(aryl) groups, -NH(heterocyclyl) groups, -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups, $-N(heterocyclyl)_2$ groups, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, -OH, substituted and unsubstituted alkoxy groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted aryloxy groups, heterocyclyloxy groups, -NHOH, -N(alkyl)OH groups, -N(aryl)OH groups, -N(alkyl)O-alkyl groups, -N(aryl)O-alkyl groups, -N(alkyl)O-aryl groups, and -N(aryl)O-aryl groups.

2. The compound according to claim 1, wherein Y is selected from the group consisting of –OH, $-OR^8$ groups, and $-NR^{10}R^{11}$ groups.

3. The compound according to claim 1, wherein Y is a $-NR^{10}R^{11}$ group.

4. The compound according to claim 1, wherein Z is an NR^{13} group.

5. The compound according claim 1, wherein R^4 and R^7 are hydrogen and R^5 and R^6 are selected from the group consisting of hydrogen and alkyl groups having from 1 to 4 carbon atoms.

6. The compound according to claim 1, wherein R^5 or R^6 is an $-OR^{14}$ group and R^{14} is an alkyl, aryl, heterocyclyl, or heterocyclylalkyl group.

7. The compound according to claim 1, wherein R^5 or R^6 is a $-OCH_2(CH_2)_q$(heterocyclyl) group and q is 0, 1, 2, 3, or 4.

8. The compound according to claim 1, wherein R^{17} is selected from the group consisting of substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, $-NH_2$, -NH(alkyl) groups, $-N(alkyl)_2$ groups, -NH(aryl) groups, $-N(aryl)_2$ groups, -N(alkyl)(aryl) groups, -NH(heterocyclyl) groups, -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups, $-N(heterocyclyl)_2$ groups, and N-containing heterocycles, wherein the N-containing heterocycles are bonded to the carbonyl carbon of the –C(=O)-R^{17} group through either a nitrogen atom or a carbon atom in the rings of the N-containing heterocycles.

9. The compound according to claim 1, wherein one of R^{10} or R^{11} is H.

10. The compound according to claim 1, wherein R^{10} and R^{11} are both H.

11. The compound according to claim 10, wherein R^1 and R^2 join to form a substituted or unsubstituted 6 membered ring comprising at least one N atom.

12. The compound according to claim 11, wherein at least one of R^5 or R^6 is a substituted or unsubstituted heterocyclyl group.

13. The compound according to claim 11, wherein at least one of R^5 or R^6 is a substituted or unsubstituted heterocyclyl group selected from the group consisting of morpholine, piperazine, piperidine, 1,2,3-triazole, 1,2,4-triazole, tetrazole, pyrrolidine, pyrazole, pyrrole, thiomorpholine, homopiperazine, benzimidazole, oxazolidin-2-one, pyrrolidin-2-one, imidazole, isoxazole, oxazole, isothiazole, thiazole, thiophene, furan, pyran, tetrahydrothiophene, tetrahydrofuran, tetrahydropyran, and pyridine.

14. The compound according to claim 1, wherein R^1 and R^2 join to form a substituted or unsubstituted 6 membered ring comprising at least one N atom.

15. The compound according to claim 1, wherein at least one of R^5 or R^6 is a substituted or unsubstituted heterocyclyl group.

16. The compound according to claim 1, wherein at least one of R^5 or R^6 is a substituted or unsubstituted heterocyclyl group comprising at least one O or N atom.

17. The compound according to claim 1, wherein at least one of R^5 or R^6 is a substituted or unsubstituted heterocyclyl group selected from the group consisting of morpholine, piperazine, piperidine, 1,2,3-triazole, 1,2,4-triazole, tetrazole, pyrrolidine, pyrazole, pyrrole, thiomorpholine, homopiperazine, benzimidazole, oxazolidin-2-one, pyrrolidin-2-one, imidazole, isoxazole, oxazole, isothiazole, thiazole, thiophene, furan, pyran, tetrahydrothiophene, tetrahydrofuran, tetrahydropyran, and pyridine.

18. The compound according to claim 1, wherein Y is selected from the group consisting of from $-N(CH_3)_2$, $-NH(CH_3)$, $-NH(CH_2CH_3)$, $-N(CH_2CH_3)_2$, -NH(aryl) groups, $-N(aryl)_2$ groups, $-NHNH_2$, $-NHN(CH_3)_2$, $-N(CH_3)NH(CH_3)$, $-NH(CH_2)_mNH_2$ groups, $-NH(CH_2)_mNH(alkyl)$ groups, $-NH(CH_2)_mN(alkyl)_2$ groups, $-N(alkyl)(CH_2)_mNH_2$ groups, $-N(alkyl)(CH_2)_mNH(alkyl)$ groups, $-N(alkyl)(CH_2)_mN(alkyl)_2$ groups, $-NH(CH_2)_n$(heterocyclyl) groups, $-N(alkyl)[(CH_2)_n$(heterocyclyl)] groups, $-NH(CH_2)_mOH$ groups, $-NH(CH_2)_mOCH_3$ groups, $-NHCH_2CH(NH_2)CH(CH_3)_2$, -NH(2-aminocyclohexyl), -NH(cyclohexyl), $-NHOCH_3$, -NH(N-morpholinyl), and -NH(quinuclidyl), wherein m is 2, 3, or 4 and n is 0, 1, 2, or 3.

19. A pharmaceutical formulation, comprising the compound according to claim 1 in combination with a pharmaceutically acceptable carrier.